

## A new *Pseudocetopsis* species (Siluriformes: Cetopsidae) from Suriname and French Guiana

Richard P. Vari, Carl J. Ferraris, Jr., and Philippe Keith

(RPV) Department of Systematic Biology—Fishes, National Museum of Natural History,  
Smithsonian Institution, Washington, D.C. 20560-0159, U.S.A.;

(CJF) Research Associate, Department of Systematic Biology—Fishes, National Museum of  
Natural History, Smithsonian Institution, Washington, D.C. 20560-0159, U.S.A.;

(PK) Muséum National d'Histoire Naturelle, Laboratoire d'ichtyologie, 43 rue Cuvier,  
75231 Paris cedex 05, France

*Abstract.*—*Pseudocetopsis orientale*, a new catfish species of small body size of the cetopsid subfamily Cetopsinae is described from several Atlantic-slope rivers of Suriname and French Guiana. The combination of the presence of a dorsal fin with an ossified spinelet, the possession of pectoral- and dorsal-fin spines, the length of the pelvic and pectoral fins, the relative depth of the body, and the alignment of the dorsal and ventral profiles of the portion of the body posterior of the dorsal-fin base serve to distinguish the new species from all other cetopsines.

*Résumé.*—*Pseudocetopsis orientale*, une nouvelle espèce de poisson chat Cetopsinae de la famille des Cetopsidae, est décrit de plusieurs rivières du Suriname et de Guyane française. La combinaison de plusieurs caractères incluant la présence d'une nageoire dorsale avec un crochet ossifié, la présence d'épines dorsales et pectorales, la longueur des nageoires pelviennes et pectorales, la hauteur relative du corps et l'alignement des profils dorsaux et ventraux à l'arrière de la nageoire dorsale permet de distinguer cette espèce de toutes les autres Cetopsinae.

---

Recent studies have demonstrated that the species-level diversity among catfishes of the South American subfamily Cetopsinae as defined by de Pinna & Vari (1995) is significantly higher than the 12 species recognized by Burgess (1989), with five additional species described by Ferraris & Brown (1991), Lundberg & Rapp Py-Daniel (1994), Ferraris (1996), and Oliveira et al. (2001). Ongoing studies indicate that these 17 species, nonetheless, represent a significant underestimate of the actual species-level diversity within the subfamily, and we herein describe a new species from Suriname and French Guiana discovered independently during a revisionary study of the subfamily (RPV, CJF) and faunal studies of the ichthyofauna of French Guiana (PK).

### Materials and Methods

All measurements were taken as straight line distances between points with head length (HL) measured from the tip of the snout to the end of the fleshy gill cover. Interorbital width was taken as the shortest distance between the orbits, but is, however, difficult to measure unambiguously because of the fleshy tissues around the orbits. The soft bodies of most cetopsins make it difficult to accurately measure most standard morphometric features. As a consequence we do not provide these values for the species. Size of examined specimens is reported as standard length (SL) rounded to the nearest whole millimeter. Median fin ray counts include all elements apparent in radiographs. The number of vertebrae was



Fig. 1. *Pseudocetopsis orientale*, holotype, MHNG 2621.040, 27 mm SL, Suriname, Brokopondo District, Mindrineti Kreek, close to mouth of Maykaboeka Kreek, on the Gros Rosevel Mining concession (5°07'08.8"N, 55°16'59.4"W).

taken from radiographs and includes the four elements of the Weberian apparatus and one element for the ural complex. Vertebrae were separated into preanal, precaudal, and caudal elements with total vertebrae the sum of precaudal and caudal vertebrae. The presence of the sexually dimorphic features present in males of other cetopsin species was considered indicative of the sex for those specimens that could not be dissected but with these attributes.

The range of values for meristic and morphometric features in the species is presented first, followed by the values for the holotype in square brackets. Numbers of specimens is indicated by "ex." Institutional abbreviations are: AMNH, American Museum of Natural History, New York; ANSP, Academy of Natural Sciences, Philadelphia; FMNH, Field Museum of Natural History, Chicago; MNHG, Muséum d'Histoire Naturelle, Geneva; MNHN, Muséum National d'Histoire Naturelle, Paris; MZUSP, Museu de Zoologia da Universidade de São Paulo; NZCS, National Zoological Collection of Suriname, Paramaribo; and USNM, National Museum of Natural History, Smithsonian Institution, Washington, D.C.

*Pseudocetopsis orientale*, new species

Fig. 1

*Hemicetopsis* sp., Boujard et al., 1990:347 [French Guiana, Fleuve Arataye]. Ponton & Copp, 1997:241 [French Guiana, Fleuve Sinnamary].

*Pseudocetopsis* cf. *minutus* Le Bail et al., 2000:146, unnumbered figure [French Guiana, Fleuve Maroni, Fleuve Iracoubo, Fleuve Comté, Fleuve Oyapock].

*Holotype*.—MHNG 2621-040, 27 mm SL, Suriname, Brokopondo District, Mindrineti Kreek, close to mouth of Maykaboeka Kreek, Saramacca River basin, on Gros Rosevel Mining concession (5°07'08.8"N, 55°16'59.4"W), R. Commergnat, J. Mol, and C. Weber.

*Paratypes*.—All Suriname, Brokopondo District, Saramacca River basin: MHNG 2626.013, 9 ex., 18–27 mm SL (collected with holotype); USNM 369732, 2 ex., 21–24 mm SL (collected with holotype); MNHN 2002.1625, 1 ex., 26 mm SL (collected with holotype); NZCS F7048, 1 specimen, 23 mm SL (collected with holotype). MHNG 2621.044, 2 ex., 22–22 mm SL and MHNG 2621.039, 4 ex., 21–26 mm SL, close to mouth of Maykaboeka Kreek, on Gros Rosebel Mining concession (collected close to type locality), R. Commergnat, J. Mol, and C. Weber. MZUSP 65404, 1 ex., 27 mm SL, Maykaboeka Kreek, Gros Rosebel Area, near Golden Star Concession (5°04'45"N, 55°16'09"W), C.A. Figueiredo, F. Breden, and H. Brook, Jan 2000.

*Non-type specimens examined*.—31 specimens, 18–49 mm SL.

FRENCH GUIANA. MNHN 2002-1103, 3 ex., 38–39 mm SL, no specific locality. MNHN 1994-0092, 1 ex., 30 mm SL, Fleuve Arataye, Saut Parare (4°03'N, 52°42'W). MNHN 2002-1099, 2 ex., 38–39

mm SL; Crique Boulanger of Fleuve Comté (4°36'N, 52°19'W). MNHN 2002-1100, 1 ex., 22 mm SL; MNHN 2002-1098, 2 ex., 43–49 mm SL, Crique Balatée of Fleuve Maroni (5°29'N, 54°03'W). MNHN 2002-1101, 8 ex., 24–44 mm SL, Degrad Florian of Fleuve Iracoubo (5°29'N, 53°33'W). MNHN 2002-1102, 11 ex., 40–49 mm SL, Fleuve Oyapock.

**SURINAME.** All Nickerie District. FMNH 96268, 1 ex., 25 mm SL, Kaiserberg River (approximately 3°03'N, 56°35'W). AMNH 54828, 1 ex., 22 mm SL, stream near Avanavero, approximately 3 miles (=4.8 km) downstream of DeVis Falls (~4°48'N, 57°26'W). AMNH 55001, 1 ex., 32 mm SL, small stream on road from Lucie River Camp to Paramaribo, 25 km N of Sisa Creek (~3°34'N, 57°37'W). USNM 226146, 2 ex., 22–23 mm SL, woodland stream, 0.5 km from Camp Mataway (4°48'N, 57°43'W). USNM 226147, 7 ex., 18–24 mm SL (2 ex. cleared and stained), stream near Camp Anjoemara (4°50'N, 57°26'W). USNM 226148, 1 ex., 30 mm SL, stream at km 212 of road from Amotopo to Camp Geology, at Machine Park—Camp 212 (3°50'N, 57°34'W).

**Diagnosis.**—The combination of the presence of a dorsal fin with an ossified spinelet and the presence of pectoral and dorsal spines distinguishes *Pseudocetopsis orientale* from all other members of the Cetopsinae with the exception of *P. minuta* (Eigenmann, 1912) from the Essequibo River basin of Guyana. *Pseudocetopsis orientale* differs from *P. minuta* in the length of the pelvic fin (tip of fin reaches posteriorly to anterior margin of vent versus to anal-fin origin, respectively), in the length of the pectoral fin (tip of fin falls distinctly short of vertical through pelvic-fin insertion versus reaches that line), the relative depth of the body (0.21–0.23 of SL versus 0.17–0.19, respectively), and in the alignment of the dorsal and ventral profiles of the portion of the body posterior of the dorsal fin (converging slightly posteriorly versus parallel, respectively).

**Description.**—Body moderately robust, somewhat compressed laterally anteriorly and becoming progressively distinctly compressed posteriorly. Body depth at dorsal-fin origin approximately 0.21–0.23 of SL, and approximately equal to distance from anterior of eye to rear of head. Lateral line on body unbranched, midlateral, incomplete, and extending from vertical through pectoral-fin base posteriorly to point within region delimited anteriorly by vertical through middle of anal-fin base and posteriorly by vertical located proximate to anterior terminus of caudal peduncle. Dorsal profile of body nearly straight to slightly convex from nape to dorsal-fin origin and straight from that point to caudal-fin base. Ventral profile of body slightly convex along abdomen, approximately straight along anal-fin base and converging towards dorsal profile of body posteriorly. Caudal-peduncle depth greater than caudal-peduncle length.

Head in profile acutely triangular overall with bluntly pointed snout. Dorsal profile of head slightly convex from tip of snout to vertical through posterior margin of orbit and broadly convex from that point to nape. Ventral profile of head slightly convex. Margin of snout in dorsal view broadly rounded. Postorbital margins of head slightly convex on each side from dorsal view. Enlarged jaw musculature very evident on dorsal and lateral surfaces of postorbital portion of head.

Opercular membrane attached to isthmus only anterior of vertical through pectoral-fin insertion. Opercular opening moderately elongate; opening extending anteroventral of pectoral-fin insertion by distance approximately equal to one-third of head length and extending dorsal of pectoral-fin insertion by distance equal to width of eye.

Eye situated on lateral surface of head; located entirely dorsal to horizontal through pectoral-fin insertion; eye visible in dorsal view, but not in ventral view, of head. Middle of orbit at approximately 0.30 of HL. Eye diameter approximately one-third of

snout length. Interorbital width approximately equal to distance from tip of snout to point within region between middle of eye and posterior margin of orbit. Anterior narial opening circular, surrounded by short, anteriorly directed, tubular rim of skin. Opening of anterior nares located slightly dorsal of horizontal that extends through maxillary-barbel origin and at, or slightly ventral of, horizontal through tip of snout. Distance between anterior nares approximately equal to distance from tip of snout to middle of orbit. Posterior narial opening located on dorsal surface of head, situated dorsal to anterior one-third of orbit. Narial opening nearly round and with flap of skin that nearly encircles opening, but with small gap posteriorly; flap highest anterolaterally.

Mouth subterminal, very wide; its width approximately 0.60 of HL. Margin of lower jaw gently rounded, its posterior limit reaching to vertical through middle of orbit. Premaxillary tooth patch in form of gently arched band continuous across midline; anterior margin convex, and posterior margin concave and parallel to anterior margin. Teeth on premaxilla small, conical, sharply pointed, and arranged in three regular rows of uniform-sized teeth across entire premaxilla. Vomerine teeth in single arched row, with distinct gap in series at midline. Vomerine teeth conical, all of approximately uniform size, and with largest teeth in series approximately same size as largest teeth on premaxilla. Dentary teeth comparable in shape to, but slightly larger than, premaxillary teeth. Dentary with three irregular tooth rows medially that taper to one row laterally.

Maxillary barbel slender, its length approximately equal to length of orbit plus postorbital portion of head, and slightly greater than three-quarters of HL; barbel origin located ventral to anterior margin of orbit. Medial mental barbel slightly shorter than lateral mental barbel, with latter shorter than maxillary barbel. Medial mental-barbel origin located along vertical through

rictus. Lateral mental-barbel origin situated slightly posterior of vertical through medial mental-barbel origin. Tips of adpressed mental barbels extend to, or barely beyond, opercular margin.

Dorsal-fin rays 6 [6]. Dorsal fin moderate, its base approximately 0.38–0.40 of HL. Longest branched dorsal-fin ray, not including distal filament present in mature males, equal in length to approximately two-thirds of HL. Dorsal-fin spinelet present, first dorsal-fin ray spinous for basal one-half of length and flexible more distally, with distal filament present in mature males. Distal margin of dorsal fin slightly convex, with first branched ray longest. Dorsal-fin origin located at approximately 0.29–0.33 of SL and along vertical that extends through middle of adpressed pectoral fin. Tip of adpressed dorsal fin, not including distal filament present in mature males, reaching to vertical through anterior margin of vent. Last dorsal-fin ray with slight basal posterior membranous attachment to body.

Caudal-fin rays *i,7,8,i* [*i,7,8,i*]. Caudal fin deeply forked, lobes symmetrical; tips of lobes rounded. Length of longest caudal-fin ray approximately two times length of middle rays.

Anal-fin rays 23 to 27 [26], rarely 27. Anal-fin base moderately long. Anal-fin origin located distinctly posterior of middle of SL and anterior of middle of total length. Anal-fin margin nearly straight in most examined specimens, but convex in presumed mature male as evidenced by presence of filamentous dorsal- and pectoral-fin rays. Last anal-fin ray with slight membranous attachment to body.

Pelvic-fin rays *i,5* [*i,5*]. Pelvic fin small; distal margin slightly convex with middle rays longest. Pelvic-fin insertion located anterior to middle of SL and along vertical through posterior limit of dorsal-fin base. Tip of adpressed pelvic fin extending past middle of SL and reaching anterior margin of vent. Last pelvic-fin ray with membranous attachment to body along basal one-half of its length.

Pectoral-fin rays 7 or 8 [7], rarely 8. Pectoral fin moderately long, its length slightly more than 0.60 of HL. Pectoral-fin margin distinctly convex, with middle ray longest. First pectoral-fin ray spinous with smooth margins, spine short with length slightly more than one-half that of first branched ray; ray prolonged as filament in presumed mature male specimens.

Preanal vertebrae 12 to 15 [15]; precaudal vertebrae 10 to 13 [11]; caudal vertebrae 27 to 29 [28]; total vertebrae 39 to 42 [39], with 39 and 40 vertebrae most common, and 42 vertebrae in only 1 of 54 radiographed specimens (total includes radiographed non-type specimens). Ribs 8 to 11 [10].

*Coloration in alcohol.*—Overall ground coloration of head and body pale and overlain with rounded, large, brown chromatophores. Dark pigmentation on head and body tends to be more concentrated dorsally. Expanded chromatophores blend together to form uniform brown cast on some portions of body in most specimens. Ventral surface of abdomen and head pale except for scattered chromatophores on abdomen in some specimens and broad band of scattered, dark chromatophores that extend from symphysis of lower jaw to opercle.

Dorsal fin pale with some dark pigmentation basally that forms somewhat diffuse spot with margin of spot in form of semicircle. Anal fin pale with scattered dark chromatophores basally. Pelvic and pectoral fins pale. Caudal fin with few scattered dark chromatophores that extend distally to at least middle of fin rays.

Maxillary barbel with scattered dark pigmentation basally and pale distally. Mental barbels pale.

*Coloration in life.*—Le Bail et al. (2000: 147) provided a photograph of a live specimen of the species (identified therein as *Pseudocetopsis* cf. *minutus*), photographed in an aquarium immediately after capture. The overall dark pigmentation visible in the photograph is comparable to that in the preserved specimens, but the head, body, and

fins of the specimen have an overlying silvery sheen that is absent in preserved material.

*Sexual dimorphism.*—The presumed mature males of *P. orientale* have filaments present on the dorsal and pectoral fins and have the anal-fin margin slightly convex. Juveniles and females of the species, in contrast, lack filaments on the fins and have a straight anal-fin margin.

*Distribution.*—*Pseudocetopsis orientale* is known from the Atlantic coastal rivers of Suriname and French Guiana, in the region from the Corantijn River, that forms the border between Suriname and Guyana, to the Fleuve Oyapock-Rio Oiapoque along the French Guiana-Brazil border. Given the presence of this species in the Surinamese tributaries of the Corantijn River, it likely also occurs in the left-bank tributaries to that river in Guyana. Similarly it is likely that the species also occurs in the portions of the Rio Oiapoque basin within Brazil.

*Etymology.*—The species name, *orientale*, from the Latin for eastern, refers to the distribution of this species in the eastern most portions of the known distribution of the Cetopsinae.

*Ecology.*—The type locality is a rainforest stream bordered by overhanging vegetation that at the time of the collection had low (40 cm deep), clear, slowly-moving water over a sand bottom with mud along the banks. The holotype and paratypes captured with it came from holes and fissures in decaying branches submerged along the side of the stream (C. Weber, MHNG, pers. comm.). Mol et al. (2000:430) characterize the Maykaboeka Kreek as a low-gradient, second order drainage running through undisturbed rainforest. Non-type specimens from Degrad Florian in the Fleuve Iracoubo basin, French Guiana (MNHN 2002-1101), were captured in a stream approximately 3 m wide and 10–59 cm deep in clear, but slightly tea-colored waters in areas with slow current densely shaded by the gallery forest. Observations at that locality indicate that during the day *Pseudocetopsis orien-*

*tale* is hidden in the sediment under leaves or roots (PK).

*Remarks.*—The question of generic limits within the Cetopsinae has been discussed by various authors in recent years including Ferraris & Brown (1991), Lundberg & Rapp Py Daniel (1994), and Ferraris (1996). Ongoing phylogenetic studies indicate that a revamping of some generic definitions within the Cetopsinae may be necessary, but in the interim we assign the new species to *Pseudocetopsis* in keeping with the definition of that genus proposed by Ferraris & Brown (1991).

*Pseudocetopsis minutus*, which was originally described by Eigenmann (1912:211) as *Hemicetopsis minutus* from the Essequibo River system, has been reported by subsequent authors from a series of localities distant from that drainage basin including French Guiana (see synonymy above), the Rio Trombetas in the Amazon basin in Brazil (Ferreira, 1995:52), the Río Caroni in Venezuela (Taphorn & García Tenía, 1991, fig. 3; Lasso et al., 1990:117) and other rivers in that country (Machado-Allison et al., 1993:65, as *Hemicetopsis minimus*). Ongoing studies indicate that *P. minutus* is rather apparently endemic to the Essequibo River basin of Guyana and our comparisons herein of *P. orientale* are limited to material of *P. minutus* from that river basin.

*Comparative material examined.*—*Pseudocetopsis minuta*: British Guiana (=Guyana) Amatuk (5°18'N, 59°18'W), FMNH 53262, 1 (18 mm SL, holotype of *Hemicetopsis minutus*). *Siparuni VIII-2*: Essequibo River at Essequibo campsite (04°45'41"N, 58°45'53"W), ANSP 175839, 1 (21 mm SL).

#### Acknowledgments

Research and museum visits associated with the preparation of this paper were made possible by funding from the Neotropical Lowlands Research Program of the Smithsonian Institution. We thank Scott A. Schaefer and Barbara Brown, AMNH; John

L. Lundberg and Mark Sabaj, ANSP; Mary Anne Rogers, FMNH; Jean-Claude Hureau and Patrice Pruvost, MNHN; Claude Weber, MHNG; Carlos A. Figueiredo and Mário C.C. de Pinna, MZUSP; for access to or the loan of specimens that made this paper possible. Claude Weber also provided information on the type locality. Sandra J. Raredon (USNM) provided technical support for the project and Pierre-Yves Le Bail, Institut National de la Recherche Agronomique, provided critical assistance during collecting efforts in French Guiana. Figure 1 was prepared by T. Britt Griswold. This paper benefitted from comments and suggestions from Marcelo R. Britto, Ricardo M.C. Castro, and Angela Zanata.

#### Literature Cited

- Boujard, T., F. J. Meunier, M. Pascal, & J. F. Cosson. 1990. Les Téléostéens d'un haut bassin fluvial Guyanais, l'Arataye. 2—Inventaires des "non-Characoïdes." *Cybum*, 14(4):345–351.
- Burgess, W. E. 1989. An atlas of freshwater and marine catfishes. A preliminary survey of the Siluriformes. T.F.H. Publications, Neptune City, New Jersey, U.S.A., 784 pp.
- Eigenmann, C. H. 1912. The freshwater fishes of British Guiana, including a study of the ecological grouping of species and the relation of the fauna of the plateau to that of the lowlands.—*Memiors of the Carnegie Museum*, 5:xii + 578 pages, 103 plates.
- Ferraris, C. J., Jr. 1996. *Denticetopsis*, a new genus of South American whale catfish (Siluriformes: Cetopsidae, Cetopsinae), with two new species.—*Proceedings of the California Academy of Sciences* 49(6):161–170.
- , & B. A. Brown. 1991. A new species of *Pseudocetopsis* from the Río Negro drainage of Venezuela (Siluriformes: Cetopsidae).—*Copeia* 1991(1):161–165.
- Ferreira, E. 1995. Composição, distribuição e aspectos ecológicos da ictiofauna de um trecho do rio Trombetas, na área de influência da futura UHE Cachoeira Porteira, Estado do Pará, Brasil.—*Acta Amazonica* 23(1–4, Suplemento; issue for 1993, published 1995):1–88.
- Lasso, C. A., A. Machado-Allison, & R. Pérez Hernández. 1990. Consideraciones zoogeográficas de los peces de la Gran Sabana (Alto Caroni) Venezuela, y sus relaciones con las cuencas vecinas.—*Memoria Sociedad de Ciencias Naturales La Salle* 50(133–134):109–129.

- Le Bail, P.-Y., P. Keith, & P. Planquette. 2000. Atlas des poissons d'eau douce de Guyane. Tome 2. Fascicule II. Siluriformes. Muséum National d'Histoire Naturelle, Service du Patrimoine Naturel, Paris, and Institut d'Écologie et de Gestion de la Biodiversité, Paris. 307 pp.
- Lundberg, J. G., & L. Rapp-Py-Daniel. 1994. *Bathycetopsis oliveirai*, gen. et sp. nov., a blind and depigmented catfish (Siluriformes: Cetopsidae) from the Brazilian Amazon.—*Copeia* 1994(2): 381–390.
- Machado-Allison, A., C. Lasso, & R. Royero-León. 1993. Inventario preliminar y aspectos ecológicos de los peces de los Ríos Aguaro y Guariquito (Parque Nacional), Estado Guarico, Venezuela.—*Memoria Sociedad de Ciencias Naturales La Salle* 53(139):55–80.
- Mol, J. H., D. Resida, J. C. Ramlal, & C. R. Becker. 2000. Effects of El Niño-related drought on freshwater and brackish-water fishes in Suriname, South America.—*Environmental Biology of Fishes* 59(4):429–440.
- Oliveira, J. C. de, R. P. Vari, & C. J. Ferraris, Jr. 2001. A new species of “Whale catfish” (Siluriformes: Cetopsidae) from the western portions of the Amazon basin.—*Proceedings of the Biological Society of Washington* 114(3):574–578.
- de Pinna, M. C. C., & R. P. Vari. 1995. Monophyly and phylogenetic diagnosis of the family Cetopsidae, with synonymization of the Helogenidae (Teleostei: Siluriformes).—*Smithsonian Contributions to Zoology* 51:1–26.
- Ponton, D., & G. H. Copp. 1997. Early dry-season community structure and habitat use of young fish in tributaries of the River Sinnamary (French Guiana, South America) before and after Hydrodam operation.—*Environmental Biology of Fishes* 50:235–256.
- Taphorn, D. C., & J. G. García Tenía. 1991. El Río Claro y sus peces, con consideraciones de los impactos ambientales de las presas sobre la ictiofauna del bajo Río Caroni.—*Biollania* 8:23–45.